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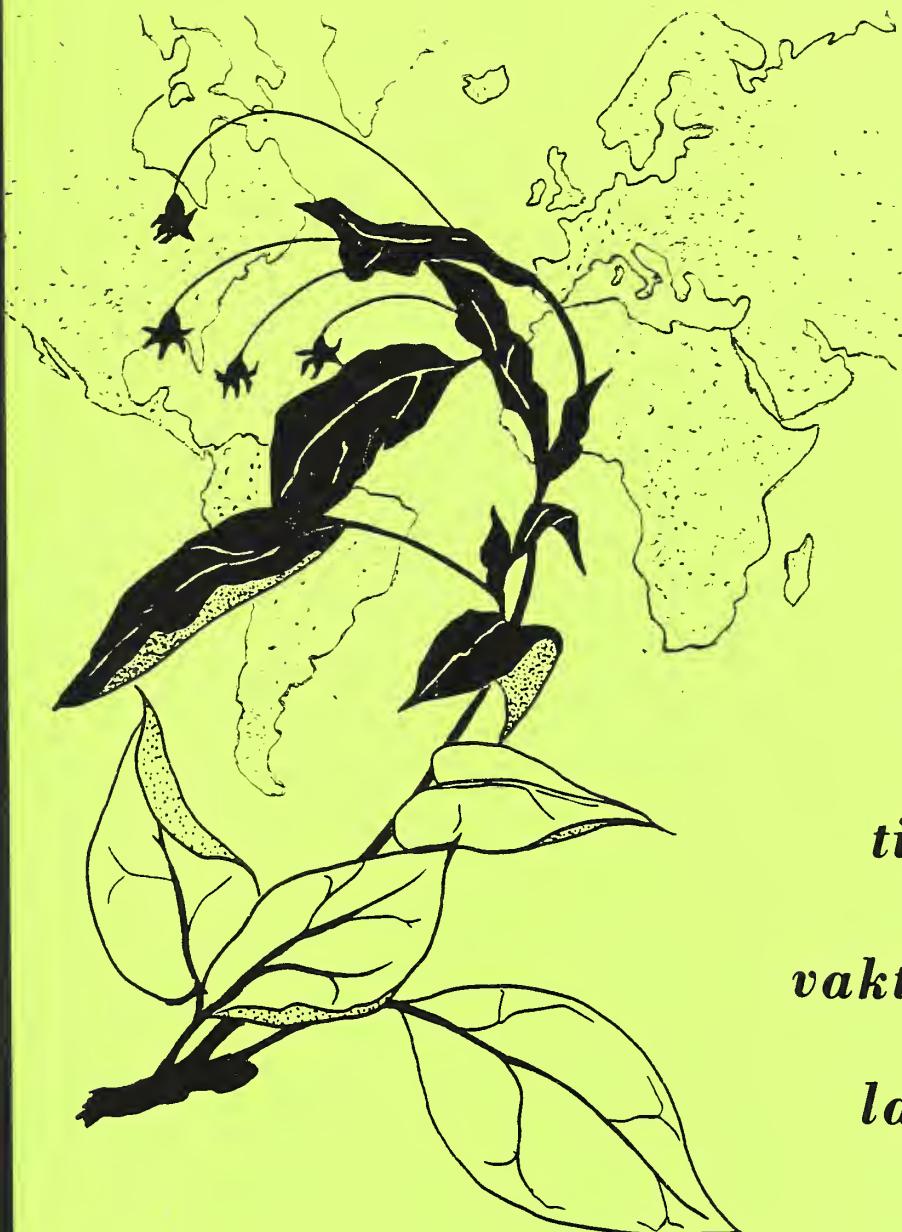
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NEWSLETTER

JANUARY 1986



fire blight

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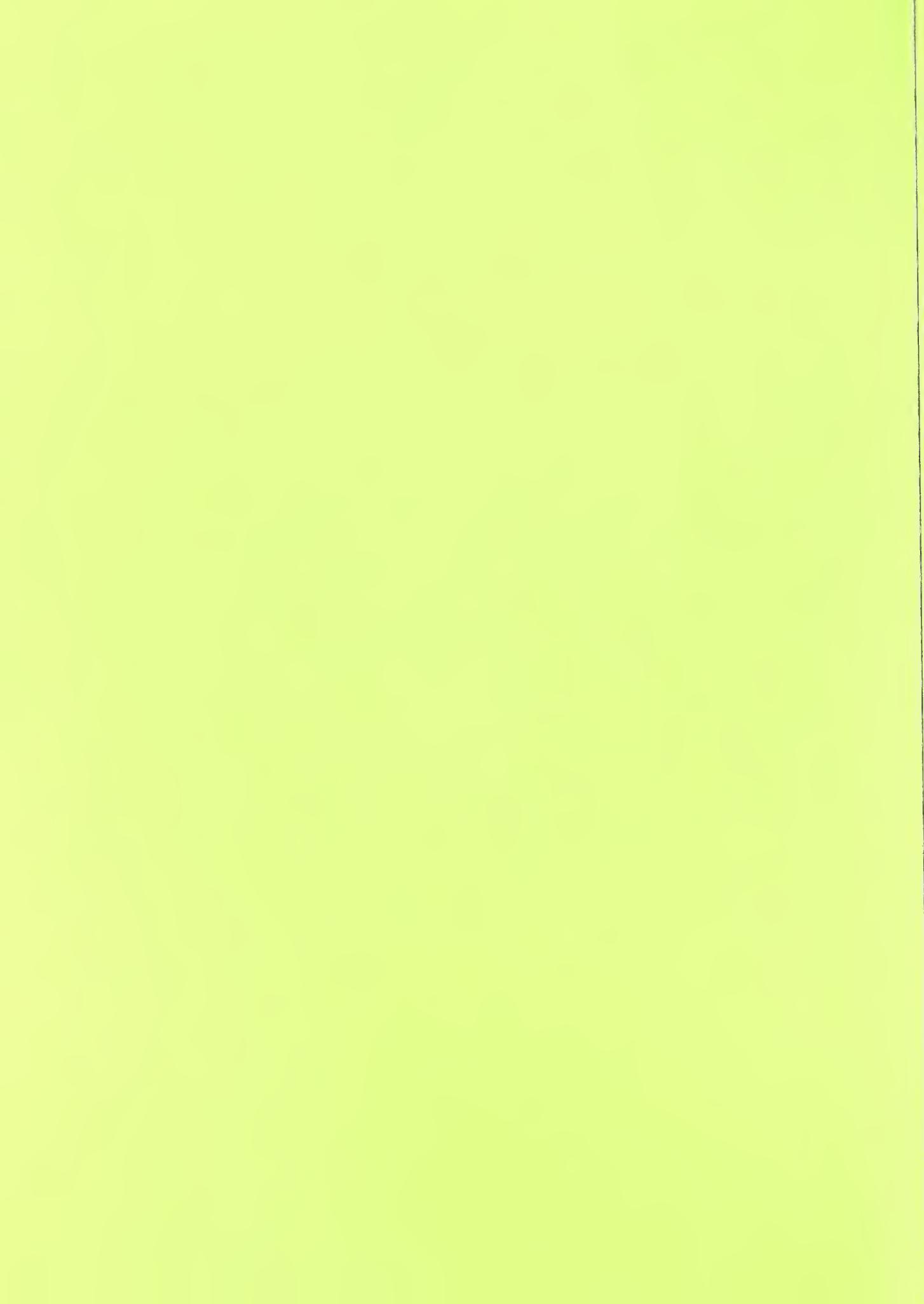
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KHERAKHON

INTERNATIONAL WORKING GROUP

ON FIRE BLIGHT RESEARCH



I N T E R N A T I O N A L W O R K I N G G R O U P
O N
F I R E B L I G H T R E S E A R C H

NEWSLETTER

from the

Plant Protection Commission
International Society for Horticultural Science

in cooperation with

U.S. Deciduous Tree Fruit Disease Workers

and

European & Mediterranean Plant Protection Organization

JANUARY 1986

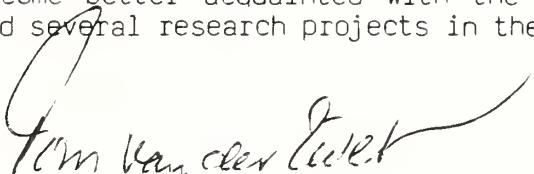
United States Department of Agriculture
Agricultural Research Service

Appalachian Fruit Research Station
Kearneysville, West Virginia, USA

Letter from the Editor

The Newsletter for 1985 had been mailed two weeks when news reached me that fire blight ("Kherakhon") had been observed in Israel. Thus, it becomes the 15th country where the disease is officially recorded and Hebrew is the tenth language to join the cover of our newsletter. With fire blight reportedly in epidemic proportions in Egypt and Cyprus, this bacterial disease is thus well established in the Middle East. Also it should not be a surprise to anyone, whenever fire blight will be reported from Lebanon, Syria and southern Turkey.

With 80-100 persons (60% from outside USA) unofficially registered for the upcoming Fourth International Workshop at Cornell University, this may become the largest international gathering of fire blight researchers since these gatherings began in Wageningen in 1977. Incidentally, the third and last American workshop on fire blight was also held at Ithaca, N.Y. in September, 1976. For those interested, a bus tour has been arranged to the USDA facilities in Kearneysville, WV and Beltsville, MD to become better acquainted with the progress in the pear breeding program and several research projects in the field of phytobacteriology.



TOM VAN DER ZWET, Secretary
North American Section
International Working Group
on Fire Blight Research

PRESENT STATUS AND NEW OCCURRENCES OF FIRE BLIGHT

OTHER COUNTRIES

WEST GERMANY

At the experimental fields in Berlin-Marienfelde, for the first time the disease fire blight (Erwinia amylovora) appeared in 1983. The first typical symptoms were discovered on May 20, 1983, especially on the pear-type 'Conference' and 'Doyenne du Comice' pear; on June 7th, five pear trees had to be cut down. Another month later, 62 trees (additionally 'Bartlett' and 'Köstliche aus Charneux') were attacked by this disease, so that by December, three rows had to be completely cut down. Also quince trees were not spared by fire blight; eight trees had to be burned. An infection was present on the apple types 'Jamba', 'Gloster' and 'Jonathan', which were near the pear trees. In 1984, generally speaking, no symptoms were detected. In 1983, a high yield was achieved; however, in 1984, because of diversification only an average yield was obtained.

Fachbereich Intern. Agrarentwicklung
der Techn. Univ. Berlin
Hellriegelstrasse 6, 1000 Berlin 33

In the northern part of Germany there was an increase of shoot infections on apple and pear trees, mainly in the fruit tree areas of the river Elbe near Hamburg. Moreover Crataegus hedges and the highly susceptible Cotoneaster varieties showed strong infections.

In the south in Rheinland-Pfalz a first attack was found in apple and pear orchards; two had to be eradicated. Mostly following varieties showed infections: 'James Grieve', 'Golden Delicious', 'Jamba' and 'Jonathan'. In the federal county Hessen a scion garden was found heavily affected, more than 60% of the planted apple varieties showed typical shoot infections, especially the varieties 'Gloster' and 'Jonathan'. In the other southern federal countries, only a low degree of infection could be observed.

Wolfgang Zeller
Dossenheim (Heidelberg)

ENGLAND

Fire blight was not generally severe in 1985-a cool spring was followed by a cool summer. However, in the Southwest infection was prevalent on hawthorn and limited on a) cider apples-in which infection was almost entirely confined to cv. 'Vilberie'-and b) on perry pears-an equilibrium now seems to have been reached and the few sporadic outbreaks were chiefly on 'Blakeney Red'.

G. Rowson has replaced all his grubbed areas with 'Old Home' and has commenced an evaluation of bush perry pears-an innovation for the industry.

North West: 1985 saw the first significant extension of fire blight to the north of the Mersey-Humber line. Infection was found in nurseries, amenity plantings and private gardens, chiefly on Cotoneaster and Crataegus, in the Liverpool-Preston-Manchester triangle.

Connie Garrett
East Malling

THE NETHERLANDS

As in 1984, the weather conditions for infection by Erwinia amylovora were very unfavorable during the first half of the year, with the exception of a few days during the blossoming time of pears and later of hawthorn. Because of low temperatures in between and afterwards, infections did not develop much, but several hail-storms in July (mainly in the south-eastern part of the country) caused considerable infection of young pear fruits and also of hawthorn. With the improvement of the weather in August, the number of infected shrubs rose sharply by the end of August. Infection stayed mainly restricted, however, to hawthorns and pears. Infection of the most susceptible and formerly wide spread Cotoneaster salicifolius and C. watereri was nearly impossible because of having been killed above soil level in January and February 1985 by heavy frosts.

As a result, 1985 can be characterized as a "hawthorn-year", though it became apparent that stringent measures in preceding years towards hawthorns in general and infected hawthorns in particular has led to relatively few infections in areas where these measures had been taken.

C.A.R. Meijneke
Wageningen

ISRAEL

In early May 1985, severe blight of blossom, twig and leaf were seen in a 6-year-old pear orchard at Rosh Pina, in Galilee. It was suspected that this was fire blight. Samples of the blighted twigs were collected for the first time in mid-May 1985 from infected trees of the 'Spadona', 'Gentile' and 'Costia' cultivars, the three main pear cultivars grown in Israel. From isolations from diseased twigs on media selective for Erwinia amylovora, colonies typical to the pathogen were obtained. Halves of immature pear fruits were inoculated with suspensions from suspected colonies and after 76 h, typical drops of milky bacterial exudate appeared on the cut surface. Leaves of young tobacco plants infected with bacterial suspension from typical colonies of E. amylovora developed induced hypersensitive reaction necrosis. Confirmatory diagnosis of E. amylovora was obtained in agglutination tests against an antiserum for the pathogen obtained from Dr. H. Miller (IPO, Wageningen, The Netherlands). Similar agglutination was obtained from an antiserum for the Rosh Pina isolate. A survey of pear orchards all over the country revealed that seven orchards were infected with fire blight, four in the north of Israel and three in the southern coastal plain. Five of these orchards are old (more than 20 years old) and two are young (6 years old). In three orchards (one young and two old) hundreds of trees were infected with fire blight, but in the four other orchards fire blight was detected in only a few trees.

D. Zutra & E. Shabi
Bet Dagan

POLAND

In 1985, fire blight has been spread southward to the center of the country (Lodz and Skieriewice provinces). It was recognized in several commercial orchards of apple and on wild growing pears and hawthorns. First symptoms were observed about mid June on blossoms, mainly of cultivars: 'Close', 'Vista Bella', 'Jersey Mac', 'Jonathan' and 'Idared'. Later it was recognized also on young shoots. The potential of fire blight activity (PFA) during the active vegetation period, according to the system of Billing, was very high.

Spraying with copper oxichloride, removal of the infected parts or all trees, delaying summer pruning, protecting of the wounds and reducing of the nitrogen fertilization, were recommended to the growers.

In the northern part of the country, around previously contaminated places, the incidence of the disease was moderate.

Peter Sobiczewski
Skieriewice

FRANCE

In 1985, no obvious extension of the disease has been reported (see Newsletter 1985) in spite of intense surveys in areas where fire blight is a real threat (South East) and in the neighborhood of contaminated area (i.e. Brittany).

Nevertheless some activity of the disease took place in orchards of the previously contaminated zone. The severity of the infections is variable according to places (i.e. according to both climate and species of varieties). As a rule, the active period took place in late spring and early summer. This explains contrasts in symptom development; for example in the Paris area no infection is seen on 'Passe-Crassane', an usually very susceptible early blooming pear, while severe blight is recorded on 'Doyenné du Comice', which was in full boom one week or ten days later (warm and dry days). The same situation was experienced in Normandy where cider apple were the only apple varieties of Malus showing infections (severe). These cider varieties were blooming in late May, while dessert apples were in full bloom in late April (cool weather). Later on, July storms may have played a role in some cases.

Very few reports in nurseries, probably due to the removal of most susceptible ornamentals, anticipating the official regulation (Pyracantha gibbsii, Cotoneaster salicifolius, C. bullatus, C. watereri, C. congestus, C. dammeri, 'Coral Beauty', and any Crataegus sp.).

A number of ornamentals with fire blight in private or town gardens have been reported in several towns of the West and Southwest part of the country.

Control against fire blight is compulsory any place, any time. It is usually performed with the help and control of official services (S.P.V.), through pruning, or destruction of single trees, and in some cases, of total orchards. Official grant is available under certain conditions, to remove Passe-Crassane orchards, even without fire blight. The aim is to promote a change in the list of commercial pear varieties.

A "new" chemical experimentally known for long in the USA and elsewhere as MRB 10995 (3M) has been given provisional allowance for fire blight control, although it is an antibiotic (quinolone). This is a "première" in France.

Jean Pierre Paulin
Angers

EAST GERMANY

In 1985, we had some severe outbreaks of fire blight in the southern part of the DDR. Mainly hawthorn was found infected.

Helmut Kleinheimpel
Aschersleben

SWEDEN

Fire blight was not found during the 1985 survey.

Maria Graberg
Jonkoping

ITALY

Fire blight has not been recorded in Italy. Systematic field phytosanitary inspections conducted by Plant Protection Services on imported materials kept in quarantine for two years (Ministerial Decree, 23/XII/1983), have also excluded the presence of the disease.

Carlo Bazzi
Bologna

SWITZERLAND

Fire blight was not yet detected in Switzerland. Furthermore, there is no change of the report 1985.

Richard Grimm
Wadenswil

IRELAND

Fire blight not recorded in Ireland.

Patrick Walsh
Dublin

PORUGAL

As far as known, fire blight does not occur in Portugal.

J.M.S. Martins
Oeiras

AUSTRIA

Fire blight has not been found in Austria. Controls in the orchards and microbiological analyses of suspected plant samples showed always negative results.

Rigorous restrictions concerning the importation of host material are still applied.

Marianne Keck
Vienna

SPAIN

So far, no cases of fire blight have been observed in Spain. The usual surveys have been carried out.

Cristina Noval Alonso
Madrid

CYPRUS

During 1985, fire blight appeared initially on 8th April at Kalopanayiotis - Eurykhou, Dhoros and Kelokedara areas at full blooming of pear trees. The infection continued spreading and the localities are indicated on the map.



SPREAD OF FIRE BLIGHT IN CYPRUS

(Survey, Dec. 1985)

DISTRICT	PEARS		APPLES		TOTAL NO. OF TREES	
	No. of infected trees	No. of trees to be uprooted	No. of infected trees	No. of trees to be uprooted	No. of infected trees	No. of trees to be uprooted
Nicosia	13,168	9,950	13,771	10,566	26,939	20,516
Limassol	5,247	3,877	1,331	512	6,578	4,389
Paphos	2,506	1,137	436	185	2,942	1,322
Pitzilia	6,691	2,611	523	187	7,214	2,798
Total	27,612	17,575	16,061	11,450	43,673	29,025*

* 100 ha

According to a preliminary risk assessment based on the Billing system, done by Dr. R. Byrde of Bristol University, U.K., who visited Cyprus in October, 1985 as FAO consultant on fire blight, it was found that the risk for the cv. 'Superfine' was very high at certain areas where precise blossom dates were available.

Shoot infection was severe in Eurykhou-Kalopanayiotis area after a severe rain and hail storm, after blooming, in May, 1985.

Severe damages were caused on the pear cv. 'Superfine', which is about 90% of the pear trees grown in Cyprus. On this cultivar severe blossom blight as well as shoot blight with downward movement of the infection to the main limbs and even to the trunk caused the destruction of great number of pear trees.

Maria Dimova
Nicosia

JAPAN

The fire blight-like disease on 'Bartlett' pears in the east part of Aomori-ken is still very severe. However, two papers indicating that the disease is not fire blight but caused by Diaporthe spp. were published from the Fruit Tree Research Station at Morioka, Ministry of Agriculture.

Please report in the Newsletter that my report on fire blight from Japan in 1979 was wrong; there is no pear fire blight in Japan.

Ichiro Okuse
Hirosaki

NEW ZEALAND

Occasional isolated outbreaks - only twig blight in apples; warm, moist weather from flowering to mid-January.

Chris Hale
Auckland

AUSTRALIA

Fire blight has not been detected in Australia and Plant Quarantine procedures for the import of fire blight hosts are aimed at preventing its introduction.

David Cartwright
Adelaide

MOROCCO

Fire blight was not yet found in Morocco.

Adelhadi Benjama
Meknes

UNITED STATES AND CANADA

MISSOURI

Streptomycin resistance of E. amylovora still confined in Missouri to three west-central orchards.

Robert Goodman
Columbia

ILLINOIS

April 17-23, 1985

(Illinois Spray Service Report)

Fire blight likes warm weather. Dwight Powell's forecasting system suggests that 1985 will be a banner blight year. This system uses an accumulation of "degree days" since the last frost and all areas of Illinois accumulated sufficient warmth to allow the bacterium to reach population levels where blight could be serious. Therefore, use streptomycin at full rate during the bloom period on susceptible varieties. Applied at night (low wind and poor drying conditions) maximizes coverage and uptake through flower petals. Dilute spraying with Regulaid, glycerin, or glyodin also helps get streptomycin into flowers. Try to time the sprays at full pink, early bloom, full bloom and on 'Jonathan' keep the secondary blooms sprayed.

May 24-June 11

The story for the last two weeks is fire blight! It is showing up with a "vengeance" along the western border around the St. Louis area and in a few other scattered locations. A severe thunderstorm with strong wind and/or hail could make fire blight the discussion topic of 1985. Young succulent growth should be susceptible until about July 1. Nothing will stop fire blight at this time of the year. Some growers are wondering if the 13 yr cicada ovipositor wounds will provide entry sites for the bacterium and thus make the disease spread even more rapidly.

June 19-July 9

This bacterial disease is prevalent across much of Illinois with the center section of the state most severely infected. The epidemic will now proceed until terminal growth ceases. Resolve to use more streptomycin and less nitrogen and less vigorous pruning in 1986.

Steve Ries
Urbana

UTAH

Serious outbreaks of fire blight occurred on unsprayed 'Rome' and 'Jonathan' apple varieties in 1985. Many young trees were killed or badly disfigured and older trees had strikes in excess of 500 per tree. Fire blight was not observed on pear in the same areas. Growers who sprayed streptomycin on apple trees in accordance with our prediction model escaped serious outbreaks of fire blight.

The first infections occurred in blossoms in June and shoot tip infections followed in August. The latter infections were the most damaging because they ran into scaffold limbs and central leaders.

Sherm Thomson
Logan

MICHIGAN

The incidence of fire blight on pear and apple was the lowest it has been in Michigan for several years. The weather during bloom and for about two weeks after bloom was unfavorable for infection of blossoms by Erwinia amylovora. In several orchards where weather and bacterial populations were monitored, rain was recorded only once or not at all, depending on the district, and mean temperature were well below 65°F. Fire blight bacteria were not detected on blooms until about petal fall, and then in only moderate numbers. The lack of favorable blight weather in 1984 and 1985 has made it possible to eliminate most of carryover infections from the epidemic years in the early 1980's

Alan Jones
East Lansing

WEST VIRGINIA

Fire blight was severe in some West Virginia Eastern Panhandle orchards. Greater severity was noted in Jefferson County. The bloom period was relatively dry, i.e. no rain, but nighttime relative humidity reached 100% nearly every night. We have assumed that rainfall is not necessary to initiate fire blight. Temperatures were well above 65°F (18.3°C) during bloom for six days.

Joseph Barrat
Kearneysville

OREGON

Increased planting of highly susceptible red pear cultivars (Red Clapp's, 'Canal Red') has increased incidence of blight. Growers are also reporting greater difficulty recognizing blight strikes in shoots of red pear cultivars with dark red bark ('Red Bartlett', 'Red Anjou', 'Red Comice')

David Sugar
Medford

CALIFORNIA

A second consecutive year of relatively early and continuous heat accumulation during 'Bartlett' pear bloom in the Sacramento Valley and Sacramento Delta Districts resulted in another bad year for blight in 1985 in spite of relatively rainless weather and heavy control programs.

Survey indications are that inoculum levels (as measured by holdover canker counts) have grown steadily worse the last 10 years as growers struggle with economics.

Asian pear varieties and susceptible apple varieties also had a banner year for blight.

Broc Zoller
Yuba City

ONTARIO

Full bloom occurred April 25 (Harrow) for 'Bartlett' pear and shortly thereafter for apples, following two weeks of dry warm weather in southern Ontario. Bloom period was approximately two weeks early in most areas in 1985. It remained warm and dry throughout May and June in the southwest with significant rainfall occurring in mid May, late May, and mid June. The risk of fire blight during the bloom period and into the growing season was low because of a lack of rain. Reports of fire blight in pear and apple in Ontario were insignificant except for the south-central region, where shoot blight was reported to be severe in several orchards of 'Greenings' and 'Idared'.

Gordon Bonn
Harrow

BRITISH COLUMBIA

The Okanagan Valley of British Columbia, Canada had a serious outbreak of fire blight in 1985. It occurred on 'Bartlett' and 'Anjou' pears, quince and apple, and was most severe and widespread on pears with sporadic occurrences on apples. It was the first time in several years that more than a few apple trees were infected. The uncharacteristic severity of fire blight in this region was blamed on weather conditions which were favorable to the disease at a time when the trees were very susceptible. A seven day period (May 23-29) when the temperature was above 15°C with rain on six of the seven days is thought to have contributed greatly to disease spread. The site of infection was primarily rattail blooms although vigorous shoot tips also served as infection sites. Hail in localized areas lead to even higher incidence of disease in some orchards.

Peter Sholberg
Summerland

DETAILS ON CURRENT FIRE BLIGHT RESEARCH

REPORTED FROM SOME UNIVERSITIES AND EXPERIMENT STATIONS

ONTARIO

Evaluation of fire blight susceptibility of crabapples indicated that several cultivars had good resistance to the disease, notably 'Thunderchild', 'Golden Hornet', and 'Rosedale'. See Biological and Cultural Tests for Plant Disease Control for details.

G. Bonn
Agriculture Canada

WEST VIRGINIA

Attempts to develop a blossom blight prediction system for the Appalachian fruit growing region are based on the application of existing fire blight risk assessment schemes dealing with degree days (Illinois), degree hours (California) and potential doubling of the causal organism (England) prior to and during bloom. All three methods are related to temperatures above 65°F (18.3°C). In 1984, temperatures during bloom were between 50-65°F (10-18.3°C), rainfall totalled .87 inches (23 mm) during 4 days, and in general no fire blight occurred except in a few isolated areas. In 1985, temperatures during bloom were between 60-85°F (15.6-29.4°C), there was no rainfall and moderate to severe fire blight occurred in most areas. Host-pathogen-weather conditions and disease occurrence for 1986 are being studied in relation to the previous two years.

T. van der Zwet
Appalachian Fruit Research Station

Monoclonal Antibodies Specific to *Erwinia amylovora*

Forty-eight hybridoma clones secreting monoclonal antibodies against the fire blight bacterium, *Erwinia amylovora*, were produced by fusing NS-1 myeloma cells with splenic cells from mice immunized with *E. amylovora* (WV 55). The monoclonal antibodies were tested against 51 *E. amylovora* isolates from different countries using indirect ELISA. Most of the antibodies reacted with all of the isolates. Six of the monoclonal antibodies did not react to one or two isolates. Thirty-seven out of 48 monoclonal antibodies were used to test the serological specificity against 24 strains of bacteria in 6 genera. Ten clones reacted specifically only with *E. amylovora*. Sixteen hybridoma clones reacted to one or more *Erwinia* species besides *E. amylovora*. The other clones cross-reacted weakly with one or more xanthomonads or pseudomonads.

Monoclonal antibodies (MA) specific to *Erwinia amylovora* were used to identify and detect *E. amylovora* in bacterial cultures and infected apple fruits by indirect immunofluorescent staining. Pure cultures of bacterial isolates were air-dried and heat-fixed on slides or collected on polycarbonate membranes before application of MA and fluorescein

isothiocyanate (FITC)-conjugated antimouse immunoglobulin. Nine of ten species specific antibodies reacted with the external antigens of E. amylovora to yield strong positive fluorescence and were further used in the in situ detection. Diseased apple fruit tissues were first free-hand sectioned and then fixed with acetone fluorescent staining. Positive fluorescent staining was easily observed under epifluorescent microscope in infected cells but not in healthy controls.

C.P. Lin, T. A. Chen, & J. M. Wells,
Rutgers University, N.J. and
T. van der Zwet, Appal. Fruit Res. Sta.

OREGON

Evaluation of susceptibility of red pear cultivars, jointly with T. van der Zwet, USDA, Kearneysville.

D. Sugar
So. Oregon Exp. Station

WEST GERMANY

Studies on fire blight forecasting in the fruit tree area of the 'Alte Land' at the river Elbe gave good results with a modified weather system of Billing. Especially low temperatures and frost had a retarded effect on the development of incubation periods. (BAUM, Univ. Hamburg). In biocontrol studies with different antagonistic strains isolated from ornamental plants a suppressing effect on Erwinia amylovora could be obtained. The mode of action will be studied later (Isenbeck and Schulz, Univ. Kiel). Cotoneaster watereri, one of the highly susceptible ornamentals, was found as indicator plant for fire blight in North Germany. In monitoring studies with leaves and blossoms of this host plant, cells of Erwinia amylovora could be estimated still 3 weeks before symptom expression. Experiments with disinfectants on scions of apple and pear varieties as on pear fruit tissue gave a good effect by using 70% ethanol. COPAC E, Orbivet and Orbiplant Spezial after preincubation with 10^3 and 10^5 cells/ml of E. amylovora. With higher concentrations of the pathogen the disinfectant effect of the compounds was marked reduced (Zeller, Dossenheim).

A new fire blight test plot will be established in spring 1986, near Heidelberg on which the following studies are planned: resistance studies with an assortment of Cotoneaster species, control experiments with new bactericides, and epidemiological studies for forecasting the disease.

W. Zeller
Biologische Bundesanstalt

ITALY

The breeding program for fire blight resistance by the Istituto Sperimentale per la Frutticoltura (Rome, Italy) is continuing. In 1985, laboratory analyses were carried out by the Plant Protection Service of Bologna to ascertain the presence of E. amylovora in buds, leaf scars and

woody organs taken from samples of 1 yr. old dormant apple plants imported from Holland and France. The methods of analysis adopted, were those presented by Mazzucchi and colleagues in 1983 at the Third Int. Workshop on Fire Blight (Bordeaux, France).

C. Bazzi
Istit. Patol. Veget.

EAST GERMANY

Current research projects at the Institute of Phytopathology in Aschersleben are:

Evaluation of pear and apple varieties for resistance to fire blight
Improve control trials on apple and ornamentals

H. Kleinhempel
Inst. of Phytopath.

FRANCE

In addition to previous programs, a cider apple varieties test plot has been planted in Normandy (20 varieties) and shoots were inoculated for the first time in 1985. Results are expected after three years of shoot inoculation.

J. P. Paulin
INRA, Path. Veget.

POLAND

Further investigations on the Billing's forecasting system and its relation to disease occurrence.

Preliminary testing of the Beer and co-workers risk-assessment system.

Evaluation of efficacy of chemicals against fire blight on pear fruitlets in laboratory conditions.

P. Sobiczewski
Res. Inst. Pomology

SPAIN

A new research program is to be started in 1986 about the main preventive and control measures of the fire blight pathogen, under Spanish climatic conditions.

C. Noval Alonso
Inst. Nac. Invest. Agric.

THE NETHERLANDS

Development of a warning system for fruit growers to control fire blight.

J. J. Schouten
Agricul. Univ.

Erwinia amylovora cells from bacterial slime on twigs of pear survived longer than cells from bacterial slime on pear fruitlets.

Investigations on the survival of E. amylovora in situ in bacterial slime on detached pear twigs under various environmental conditions showed a strong decrease in the number of surviving cells after incubation at temperatures of 20 and 25° C compared to 5, 10 or 15° C, and for incubation at relative air humidites of 90% compared to 32, 60, or 75% RH.

H.P. Maas Geesteranus &
J.W.L. van Vuurde
Research Inst. for Plant Prot. (IPO)

The efficacy of four compounds in one spray against artificial inoculation with E. amylovora (10^7 cells/ml), were tested on flowering Cotoneaster dammeri 'Coral Beauty'.

In the preventive trial, Fructil (fluméquine), Kasumin 25% WP (kasugamycin), Plantomycin (streptomycin) and Koper Bayer (copperoxychloride) appeared to be equally active. In the curative trials, Fructil and Plantomycin were less active than Kasumin.

In trials under natural infection conditions, Plantomycin and Fructil gave a sufficient reduction of flower infection on 'Conference' pear. On Cotoneaster watereri 'Pendulus', Fructil, Kasumin, Plantomycin and Koper. Bayer were equally active against flower infection. The compounds were applied in a frequent scheme.

Next year research will be carried out on a spraying scheme in relation to weather conditions.

Tsj. Kooistra & J. de Gruyter
Plant Protection Service (PD)

Breeding research on woody ornamentals

Experimental fire blight Garden at Ouwerkerk

Due to the frost in January/February 1985 many plants of Cotoneaster and Pyracantha at the fire blight garden at Ouwerkerk were killed, or at least damaged. So flowering was light, and the fire blight attack not so severe.

Pyracantha

The breeding program with Pyracantha was continued; 44 crossing combinations were realized; 1100 young seedlings were tested for fire blight susceptibility in a glasshouse.

Crataegus

Seeds of *Crataegus* were received from botanical gardens all over the world. These seeds were given a controlled stratification: during one and a half hour a treatment with concentrated H_2SO_4 , followed by a one month's warm period and after that a cold period of three months. The mentioned procedure seems to stimulate germination. In glasshouse tests, *Crataegus arnoldiana* proved to be insensible (resistant?) to fire blight.

A. S. Bouma
Res. Sta. for NS & UG

It was for the first time that a lot of infection occurred in the pear cultivar trial field at the experimental garden for research on fire blight at Ouwerkerk in 1985. In that field trial the trees of each of the cultivars/selections were planted in spring of 1982, among them five cultivars which show qualities of resistance to fire blight according to literature data. These five cultivars have been selected from a group of resistant ones on the basis of a better production and fruit quality. In 1985, all trees of the cultivars 'Mac' and 'Duchesse d'Angouleme' remained free from fire blight. Only two trees of the cultivar 'Dawn' became blighted in contrast to many more trees of the remaining cultivars 'Condo', 'Conference', 'Doyenne-du Comice', 'Eldorado', 'General Leclerc', 'Star' and the IVT-selection P212 showing fire blight symptoms.

H. A. T. van der Scheer
Research Station for Fruit Growing

ENGLAND

Relationship between bacterial capsule constituents and pathogenesis

Well-established disease in 1-year-old M.26 apple plants was permanently arrested by trunk-injected D-galactose solution. Bud dormancy was broken at the node immediately below the diseased region, with the production of a vigorous healthy shoot. The effect of D-galactose on disease was associated with changes in bacterial capsulation and with the inhibition of induction of electrolyte leakage in pear fruit slices, caused by contact with bacteria. Examination of E. amylovora in the electron microscope showed changes in the cell surface occurring in response to changes in the growth medium. Capsule granulation seen in preparations stained with nuthenium red/orange acetate was observed on 44% of cells of an avirulent mutant grown on yeast-peptone. The addition of D-galactose to the medium induced a non-capsulated avirulent mutant to form capsulated cells, some of which were surface-granulated by the stain. Cultures of a virulent isolate contained 2% of cells reacting with the stain, but preparations from D-galactose medium contained 4% of such cells with enhanced capsule depth. Preparations obtained from infected plants contained 55% of surface-granulating cells. Changes of this kind would affect cell contact in host-pathogen complexes with consequent effects on host cell leakage and disease. This project has been terminated at EMRS.

R. C. Hignett
E. M. Research Station

The aim is to isolate genes controlling pathogenicity in E. amylovora. Some avirulent mutants are already available and additional capsulated mutants will be obtained following chemical mutagenesis. A library of E. amylovora DNA will be prepared in E. coli. Cosmid libraries will be transferred into E. amylovora avirulent mutants using the helper plasmid PRK2013 and clones selected which restore the mutant phenotype to wild type. The plasmid and inserted DNA fragment will be recovered. Location of the virulence genes will be closely defined by digestion and subcloning, and transposon mutagenesis. The products of selected cloned genes should be identifiable in E. coli translation systems ... We hope!!!

F. E. Hitchins
Wye College

Dr. Byrde, Long Achtion Res. Stn, reports a 99% reduction in the number of blossom infections on cider apple (W. Vilberie) with 50208. This work will be reported at Ithaca in June.

Work as commenced at ADAS Wolverhampton to evaluate various bactericides for fire blight control on pyracantha.

David Youle began work October 8th at University of Bath on a Ministry of Agriculture studentship on Mechanisms of Pathogenicity of Erwinia amylovora.

David Stead (Harpden) hopes to complete work on identification of E. amylovora by computer assisted fatty acid profiling in 1986.

Mr. Mark Wilson started a post-graduate project on fire blight in October 1985 at the Department of Botany, University of Manchester, England, under the supervision of Drs. D. C. Sige and H.A.S. Epton. His project, entitled 'Strategies for the control of fire blight' will be particularly concerned with biological control of blossom infection of Crataegus and shoot infection of Cotoneaster.

C.M.E. Garrett
E.M. Research Station

BELGIUM

Further research is carried out into the function of the honeybee in the dissemination of fire blight. In cage experiments the transmission of the bacteria from the honeybee to visited flowers is proved. Research on the survival of the Erwinia amylovora bacteria in different parts of the bee colony is being worked upon. Immunogold staining (I.G.S.) and immunogold silver staining (I.G.S.S.) techniques are tested for the identification of Erwinia amylovora.

L. De Wael
Res. Stat. for Nemat. and Entom.

I use micropropagation and tissue culture of pear and apple tree in the induction of somaclonal variation or mutagenesis, followed by screening for in vitro resistance to Erwinia amylovora.

We developed a new in vitro technique for evaluating the resistance of pear and apple tree to Erwinia amylovora and the results obtained with 15 cultivars show a good correlation between in vitro and in vivo resistance.

J. Viseur
Centre de Lutte Integr.
en Phytopath.

BRITISH COLUMBIA

Project 1: Orchard survey to determine if E. amylovora spreads from pear to apple trees in this region.

1) When is the bacteria present on apples.

Project 2: Postharvest disinfestation of apples to remove fire blight.

- 1) Identification of chemical dips which destroy E. amylovora
- 2) Conditions such as temperature which best promote the dips control features.

P. Sholberg
Agric. Canada

NEW THESES AND DISSERTATIONS ON FIRE BLIGHT

Vanneste, Joel

"Un outil génétique chez Erwinia amylovora, l'agent pathogène du feu bactérien des Pomoideae: le bactériophage Mu. Isolement de mutants affectés dans leur pouvoir pathogène", Doct. degree, Univ. Paris-Sud, Orsay, 1986.

Brisset, Marie-Noëlle

"Contribution a la mise au point d'une méthode d'obtention de mutants de Pyrus communis (c.v. Passe Crassane) résistants a Erwinia amylovora." Ing. Agro., Univ. Paris, Ina-Pg, 1985.

Baumm, Ludwig H.

"Praxisorientierte Untersuchungen zum Auftreten der Feuerbrandkrankheit (Erwinia amylovora (Burr.) Winslow et al.) im Obstanbaugebiet an der Niederelbe." Ph.D. Dissert., Univ. Hamburg, 1985. 158 pp.

Norelli, Jay L.

"Differential virulence in Erwinia amylovora", Ph.D. Diss., Cornell Univer., Ithaca, N.Y. 1986.

MISCELLANEOUS NEWS

Dr. Byrde (Long Achtion Research Station) visited Cyprus from 7-19 October to examine and advise on the serious fire blight epidemic.

Dr. E. Billing presented a paper on "Fire Blight in Hardy Ornamentals" at a Diseases of Ornamentals Workshop at Merrist Wood Agricultural College, Wooplesdon in November.

Dr. D. Stead attended a workshop in Wageningen to discuss use of immunosorption techniques for plant pathogenic bacteria including E. amylovora.

R. A. Rastell, a CASE student based at Thames Polytechnic, will be at East Malling for 6 months in 1986 to pursue studies on bacterial outer surface components with reference to the effects of galactose and other carbohydrates on disease in susceptible plants, fruit tissue and callus tissue cultures.

Joël Vanneste has left Paris on February 17 for Ithaca, NY, after having passed his thesis. He will stay during 2 years at Cornell University, with Dr. S.V. Beer and co-workers. This time he is corresponding to his military service.

Charles Manceau, INRA-Angers, arrived at Berkeley (Nick Panopoulos) in January 1986. He will stay there for one year (genetics of epiphytic Pseudomonas).

Alberto Mendoza-Herrera from Chapingo University (Mexico) will stay for three years from August 85 in INRA-Angers (J.P. Paulin) to prepare a thesis on variability in aggressibility of E. amylovora.

Marianne Keck from Vienna, Austria will be in charge of detection and surveys of fire blight in this country, where it has not been found yet. She spent one week in Angers in October 1985 (J.P. Paulin) and is due to come back for a few weeks in 1986.

Frank Kappel, who replaced Harvey Quamme at the Harrow Research Station, received his Ph.D. from the University of Guelph in March 1985. Frank will now be devoting his time to continuing the breeding program for fire blight resistance in pear and apple and pear management.

Mr. P. J. Sampson, Senior Plant Pathologist with the Tasmanian Department of Agriculture, Hobart Australia undertook a study assignment with Dr. Garrett at East Malling Research Station during the period 14 May to 14 August 1985. The purpose of the work was to familiarize himself with the disease, to gain experience in isolation and identification of the bacterium, and to develop suitable procedures for improved screening of fireblight hosts in post-entry quarantine. Mr. Sampson also visited the experimental plots at Dax in France.

Due to the severe outbreak of fire blight in Cyprus in 1985, technical assistance was requested through FAO. Two FAO consultants visited Cyprus in order to assess the extent of spread of fire blight and advise the Government on effective control measures.

1. Prof. Abo-El-Dahab, from the University of Alexandria, Egypt (July, 1985).
2. Dr. R. Byrde, from the Bristol University, U.K. (October, 1985). Both consultants submitted reports giving their findings and recommendations.

Dr. Goodman recently returned from a 4-week stay in mainland China, presenting 10 lectures at Beijing, Hangchow and Shanghai Universities. Lectures based on the bacteriology sections of the 10 chapters of a new totally rewritten edition of "Biochemistry and Physiology of Plant Disease". 450 pages, published by University of Missouri Press. Price \$45.

OBITUARIES

Dr. E. M. Hildebrand Sun City, Arizona

Dr. Jim Mowry Carbondale, Illinois

FUTURE MEETINGS

August 10-14

Annual meeting of American Phytopathological Society
Orlando, Florida.

August 11-20

XXIInd International Horticultural Congress
Davis, California

September 7-13

14th International Congress of Microbiology
Manchester, England

July 24-31, 1987

14th International Botanical Congress
Berlin, W. Germany

August 2-6, 1987

Annual meeting of American Phytopathological Society
Cincinnati, Ohio

October 5-9, 1987

XIth International Congress of Plant Protection
Manila, The Philippines

August 20-27, 1988

5th International Congress of Plant Pathology
Kyoto, Japan

June, 1989

5th International Working Group on Fire Blight

FIRE BLIGHT IN CYPRUS



ΥΠΟΥΡΓΕΙΟ ΓΕΩΡΓΙΑΣ
ΚΑΙ ΦΥΣΙΚΩΝ ΠΟΡΩΝ

ΤΜΗΜΑ ΓΕΩΡΓΙΑΣ

ΒΑΚΤΗΡΙΑΚΟ ΚΑΨΙΜΟ



Γενική εμφάνιση προσβολής



Προσβολή σε ανθοταξία και νεαρό βλαστό



Βακτηριακό έκκριμα σε νεαρούς καρπούς



Αποχρωματισμός των ιστών του φλοιού

FIRE BLIGHT LITERATURE RECEIVED DURING 1985

(Not listed in USDA Agriculture Handbook 510,
the Additional Bibliography or Previous Newsletters)

UNITED STATES

I-B-74 Stover, E. 1986
Fire blight continues its march through pear blocks. *The Goodfruit Grower* 37(8):20-22.

I-C-37 Heimann, M. F., and G. L. Worf. 1985
Fire blight of raspberry caused by Erwinia amylovora in Wisconsin. *Plant Disease* 69(4):360.

III-231 Sijam, K., R. N. Goodman, and A. L. Karr. 1985
The effect of salts on the viscosity and wilt-inducing capacity of the capsular polysaccharide of Erwinia amylovora. *Physiol. Plant Pathol.* 26(2):231-240.

III-234 Janisiewicz, W. J., T. van der Zwet, and P. B. Jahrling. 1986
Effect of gamma irradiation on survival of Erwinia amylovora. *Phytopathology* 75:626.

III-235 van der Zwet, T. 1985.
Characterization of Erwinia amylovora through fatty acid profiling. *Phytopathology* 75(11):1281.

III-236 Sijam, D., R. N. Goodman, and R. N. Karr. 1985
The effect of salts on the viscosity and wilt-inducing capacity of the capsular polysaccharide of Erwinia amylovora. *Physiol. Plant Path.* 26(2):231-239.

III-237 Vandenberghe, P. A., A. M. Wright, and A. K. Vidaver. 1985
Partial purification and characterization of a polysaccharide depolymerase associated with phage-infected Erwinia amylovora. *Appl. Environ. Microbiol.* 49(4):994-996.

III-238 Chatterjee, A. K., L. M. Ross, J. L. McEvoy, and K. K. Thurn. 1985.
Pulb-113 an Rp-4 mini-mu plasmid mediates chromosomal mobilization and R-prime formation in Erwinia amylovora, Erwinia chrysanthemi and subspecies of Erwinia carotovora. *Appl. Environ. Microbiol.* 50(1):1-9.

III-239 Bayot, R. G. and S. M. Ries. 1986
 Role of motility in apple blossom infection by Erwinia amylovora and studies of fire blight control with attractant and repellent compounds. *Phytopathology* 76(4):441.

III-240 Bauer, D. W., and S. V. Beer. 1985
 Evidence that a putative necrotoxin of Erwinia amylovora is an artifact caused by the activity of inorganic salts. *Physiol. Plant Path.* 27:284-298.

IV-112 van der Zwart, T. and J. C. Walter. 1985
 Significance of apple tissue injury to artificial infection by Erwinia amylovora. *Phytopathology* 75(5):629.

IV-113 Shigo, A. L., and T. van der Zwart. 1985
 Relationship between Pyrus wood starch and canker formation by Erwinia amylovora. *Phytopathology* 75:1316.

VI-67 Covey, R. P. 1983.
 What about fire blight? *Proc. Wash. State Hort. Assoc.* 78:171-174.

VI-68 Covey, R. P. 1975.
 Predicting fire blight goal at Wenatchee research effort. *The Goodfruit Grower* 26(5):21.

IX-275 Norelli, J. L. and T. J. Burr. 1985
 Chemical control of fire blight of apple during bloom. *Amer. Phytopath. Soc. Fung.-Nemat. Tests* 41:4

IX-276 Cline, M. N. 1985
 Stopping fire blight requires knowing its symptoms and acting promptly. *American Nurseryman* 161(11):83-88, 93-95.

XI-309 Westwood, M. N. 1982
 Rootstocks for pear: pick with care. *Amer. Fruit. Grower* 102(11):26-28.

XI-310 Cummins, J. N., and H. S. Aldwinkle. 1982
 New and forthcoming apple rootstocks. *Fruit Var. Jour.* 36(6):66-73.

XI-311 Lamb, R. C., H. S. Aldwinckle, and D. E. Terry. 1985
 'Freedom', a disease-resistant apple. *HortScience* 20(4):774-775.

XI-312 Warren, T. O. 1986
 The Warren pear. *Pomona* 19(1):36-37.

XI-313

Anonymous. 1986

Fire blight disease: Offense is the best defense. Stark Brother Nurseries Bear Facts 6(15):3.

NETHERLANDS

XII-F-88

Teylingen, M. van. 1981

Bacterievuur: een gevaarlijke planteziekte. Tuin & Landschap 20:17.

XII-F-88a

Teylingen, M. van. 1981

Bacterievuur over gehele land verspreid. Tuin & Landschap 21:17.

XII-F-89

Stolk, T. 1983

Proefveld bacterievuur in Ouwerkerk. Op weg naar ziekte-analyse, passende bestrijding en resistente rassen. Tuin & Landschap 14:10-12.

XII-F-90

Meijneke, C. A. R. 1985

Bacterievuur: de ontwikkeling van de situatie in 1984. Plant Protect. Serv. Yearb. (1984):92-97.

XII-F-91

Anonymous. 1984

Sommige struiken mag u niet meer in uw tuin zetten. Min. Agric., The Hague, 11 pp., illus.

XII-F-92

Stuurman, F. J. 1984

Meidoorn en bacterievuur. Bosbouwvoorlichting: 23(3):25-40.

XII-F-93

Maas Geesteranus, H. P. 1985

Wanneer zijn er resultaten te verwachten van de veredeling van peer op resistentie tegen bacterievuur? De Fruitteelt 30:896-897

XII-F-94

Netherlands Plant Protection Service. 1984

Bacterievuur een gevaarlijke planteziekte. Plant Protect. Serv. Bull. (revised), 10 pp., illus.

ENGLAND

XII-G-117

Garrett, C. M. E, D. A. S. Fletcher, and S. D.

Trowell. 1985

Fireblight-epidemiology and control. East Malling Res. Sta. Ann. Rept. (1984):148.

XII-G-118

Hignett, R. C., T. C. Ray, and A. R. W. Smith. 1985

Fireblight-relationship between bacterial capsule constituents and pathogenesis. East Malling Res. Sta. Ann. Rept. (1984):153.

SII-G-119 Hignett, R. C., and A. L. Roberts. 1985
A possible regulatory function for bacterial
outer surface components in fireblight disease.
Physiol. Plant Path. 27:235-243.

XII-G-120 Garrett, C. 1985
Danger-fireblight! GC & HTJ, pg 17 and 19.

XII-G-121 Cooper, R. M., P. Durrands, D. Youle, and
D. Langman. 1986
Contrasting enzymic strategies of some
microbial plant parasites. In: Natural
Antimicrobial Systems (eds. Board & Cooper et
al.) Univ. of Bath Press.

XII-G-122 Billing, E. 1985.
Fireblight: an illustrated field guide.
Memoir 1. Horsmonden, Kent, 28 pp., illus. (2
2.00).

WEST GERMANY (BRD)

XII-L-157 Isenbeck, M., and F. A. Schulz. 1985
Biological control of fireblight Erwinia amylovora on ornamentals. I. Control of the pathogen by antagonistic bacteria. *Phytopathol. Zeitsch.* 113(4):324-333.

XII-L-158 Zeller, W. 1986
Cotoneaster watereri-Indikatorpflanze zum Feuerbrandvorkommen. *Deutsche Baumschule* 4:158-159.

XII-L-159 Zeller, W. 1986
Untersuchungen zur Desinfektion des Feuerbranderregers (Erwinia amylovora) an Veredlungsreisern und Birnengewebe. *Gesunde Pflanzen* 38:23-28.

EAST GERMANY (DDR)

XII-M-19 Ehrig, F.; R. Zielke, and U. Siebert. 1984
 Einsatz der goldkolloidtechnik zum
 immunelektronenmikroskopischen nachweis
 phytopathogener bakterien. Arch. Phytopath.
 und Pflanzenschutz 20(6):513-516.

XII-M-20 Nachtigall, M., W. Ficke, and H. J. Schjaefer. 1985
 Modellversuche zur Lebensfähigkeit von Erwinia
amylovora (Burr.) Winslow et al. Arch.
 Phytopath. und Pflanzenschutz 21:455-464.

AUSTRIA

XII-N-2

Keck, M. 1984

Possibilities for identifying the fire blight pathogen (Erwinia amylovora (Burril) Winslow et al.) at the federal institute for plant protection, Vienna. *Pflanzenarzt* 37(10):153-154.

XII-N-3

Keck, M. 1985

On the probability of the appearance of fire blight in Austria. *Pflanzenschutz* 6:5-6.

SWITZERLAND

XII-O-42

Anonymous. 1984

Der feuerbrand; Le feu bacterien; Colpo di fuoco batterico. Eidgen. Forschungsanst. Obst, Wein und Gartenbau, Wadenswil, 7 pp., illus.

XII-O-43

Anonymous. 1985

Feuerbrand heute: Eine gefährliche Krankheit kommt näher. *Schweizer Garten*. 12:18-21.

XII-O-44

Pflanzenschutzinspektorat Eidg. Forschungsanstalt,

Wadenswil. 1985

Import ban on host plants of fire blight remains. *Schweiz. Zeitsch. Obst-und Weinbau* 121(10):315.

POLAND

XII-P-15

Sobiczewski, P., and D. F. Millikan. 1985

Efficacy of chemicals for control of fire blight Erwinia amylovora. *Fruit Sci. Rept.* 12(1):27-34.

XII-P-16

Sobiczewski, P., and S. Berczynski. 1985

New possibilities of the control of bacterial diseases of fruit trees. *Sad Nowoczesny* 5:9-12 (in Polish).

XII-P-17

Sobiczewski, P., S. Berczynski, and L. Piotrowicz.

1985

Can we forecast the occurrence of fire blight? *Ochr. Roslin* 6:18-21 (in Polish).

XII-P-18

Sobiczewski, P. 1985

Fire blight. III International Conference, Ochr. Roslin 4:13-15 (in Polish).

XII-P-19

Wodzinski, H. R. 1985

Nowy model prognozowania wystepowania zarazy ogniodowej na jabloniach. *Ochr. Roslin* 6:21-22.

FRANCE

XII-Q-121 Pochon, I., and P. Lecomte. 1985
Susceptibility to fireblight of the most important apple rootstocks and of some quince rootstocks. *Hortic. Franc.* 175:8-11.

XII-Q-122 Vanneste, J., J. P. Paulin, M. Duron, A. Kotoujansky, and A. Coleno. Recherche des determinants genetiques du pouvoir pathogene chez Erwinia amylovora. *Coll. Soc. Franc. Phytopath.* 26:87.

XII-Q-123 Mesnil, G. 1985
What is to be done in the face of the danger of pear bacterial blight? *Rev. Hortic.* 257(33):36-37 (in French).

XII-Q-124 Paulin, J. P., P. Balavoine, H. Boue, and P. Larue. 1985
Efficacite experimentale de produits destines a la lutte contre le feu bacterien. *Prem. Journ. d'Etudes Malad. Plantes*, pp. 453-460.

XII-Q-125 Gardan, L., C. Manceau, and J. P. Paulin. 1985
Mise au point sur les effets des traitements antibiotiques contre les maladies bacteriennes des plantes. *Prem. Journ. d'Etudes Malad. Plantes*, pp. 445-452.

XII-Q-126 Paulin, J. P. 1985
Receptivite a l'infection par Erwinia amylovora de bourgeons floraux de Poirier. *28^e Coll. Soc. Franc. Phytopath.*, pp. 174-176.

XII-Q-127 Paulin, J. P. 1985
Feu bacterien du poirier: essai d'evaluation des risques climatiques pendant la floraison. *28^e Coll. Soc. Franc. Phytopath.*, pp. 183-187.

XII-Q-128 Anonymous. 1985
Feu bacterien, du Poirier, du Pommier et Pomoidees ornementales. *Inst. Nat. Rech. Agron. Leaflet*, Febr.

XII-Q-129 Le Lezec, M., B. Thibault, P. Balavoine, and J. P. Paulin. 1985
Sensibilite varietale du pommier et du poirier au feu bacterien. *Phytoma* 365:37-44.

XII-Q-130 Le Lezec, M., B. Thibault, P. Balavoine, and J. P. Paulin. 1985
Sensibilite varietale du pommier et du poirier au feu bacterien. *Agron. Fr.* 372:19-34.

BELGIUM

XII-R-48 Vlachakis, J. and M. Verhoyen. 1984
 Isolation of phages of Erwinia amylovora (Burrill) Winslow et al. with a view to controlling pear fireblight. Meded. Fac. Landbouww. Rijksuniv. Gent 49(2b):551-558.

XII-R-49 Vantomme, R., C. Rijckaert, C. Verdonck, L. Mergaert, J. Swings, and J. De Ley. 1984
 Identification of Erwinia amylovora. Rev. L'Agric. 37(5):1157-1161.

XII-R-50 Vaerenbergh, J. van. 1984
 Survival and detection of causal Erwinia amylovora (Burill) Winslow et al. on leaf surfaces. Meded. Fac. Landbouww. Rijksuniv. Gent 49(2b):535-550.

XII-R-51 de Wael, L., O. van Laere, and M. de Greef. 1984
 Toxicity of the bactericide "MBR 10995" for honeybees. Rev. L'Agric. 37(5):1163-1166.

XII-R-52 De Coster, J. 1986
 Fire blight severe in Belgian pears. Great Lakes Fruit Grow. News 25(3):62.

SPAIN

XII-U-10 Pastor Mestre, J. 1984
Measures taken in Spain in view of the possible
introduction of bacterial fireblight. EPPO
Bull. 14(3):363-367.

RUSSIA

XIII-A-37 Kalinichenko, G. V., and R. I. Kalinichenko. 1983
Aspects of fruit production in pear in the
Crimea following infection with bacterial
disease. Sel'Skokhozyaistvennaya Biologiya
4:68-71.

ISRAEL

XIII-C-1 European and Mediterranean Plant Protection Organization. 1985 Appearance of Erwinia amylovora in Israel. Europ. and Medit. Plant Prot. Organ. Rept. RSE 459, 1 p.

XIII-C-2 Zutra, E., and E. Shabi. 1985 First evidence of fire blight in Israel. Phytoparasitica 13(2):151.

EGYPT

XIII-E-13

Abo-El-Dahab, M. K., M. A. El-Goorani, H. M. El-Kasheir, A. A. Shoeib, and W. Zeller. 1984 Zur Feuerbrand-situation in Agypten und vergleichende Untersuchungen zur Physiologie von Erwinia amylovora. Mitt. Biol. Bundesanst. Land=und Forstw. (Berlin-Dahlem) 223:168.

XIII-E-14

Abo-El-Dahab, M. K., M. A. El-Goorani, A. A. Shoeib, and W. Zeller. 1985 Zur Feuerbrand-situation in Agypten und vergleichende untersuchungen zur Taxonomie von Erwinia amylovora (Burrill) Winslow et al. Gesunde Pflanzen. 37:189-194.

TANZANIA

XIII-T-2

Hag, A. 1984 Occurrence of pyruvate decarboxylase in Erwinia amylovora. Pakistan Jour. Scient. and Industr. Res. 27(1):8-13.

CYPRUS

XIII-W-1

Anonymous. 1985 Outbreak of pests and diseases. Cyprus. Appearance of Erwinia amylovora. Quart. Newslet., FAO Asia and Pacific Plant Prot. Comm. 28(2):4.

XIII-W-2

European and Mediterranean Plant Protection Organization. 1985 Appearance of Erwinia amylovora in Cyprus. Europ. and Medit. Plant Prot. Organ. Rept. RSE 457, 1p.

XIII-W-3

Dimova, M. 1985 Vaktiriako kapsimo, Dept. Agric. Leaflet ISBN 9963, 4 pp, illus.

LIST OF PERSONS INTERESTED IN FIRE BLIGHT 1/

<u>Abo-El-Dahab, M. K.</u> , Plant Pathology Dept., Faculty of Agric., Univ. of Alexandria, Alexandria, Egypt (71960)	(1)	EGY
Agriculture Canada, Library Records Division, Ottawa, Ontario K1A 0C5, Canada	(2)	CND
Aldwinckle, H. S., Department of Plant Pathology, N.Y. State Agric. Expt. Station, Geneva, New York 14456. (315-787-2331)	(1)	USA
Aleando, Z., via Gaggiolo, 6855 Stabio, Ticino, Switzerland (091-472520)	(3)	SWT
Alivizatos, A. S., Benaki Phytopathological Institute, 8 Delta Street, Kifissia, 14561 Athens, Greece (01-8013619)	(3)	GRC
Alston, F. H., Fruit Breeding Department, East Malling Research Station, East Malling, Maidstone, Kent, ME19 6BJ, England. (0732-843833)	(1)	UK
Anderson, H., The Government Plant Protection Service, Gersonsvej 13, 2900 Hellerup, Denmark. (01-620787)	(1)	DK
Ark, P. A., St. Pauls Towers, 100 Bay Place, Apt. 1915, Oakland, California 94610. (415-835-4700, ext. 298)	(4)	USA
Arsenijevic, M., Faculty of Agriculture, Institute for Plant Prot., V. Vlakovica 2, 21000 Novi Sad, Yugoslavia. (021-58-366)	(3)	YUG
Balavoine, P., Service de la Protection des Vegetaux, Cite Administr., 59048 Lilla, France.	(2)	FR
<u>Barrat, J. G.</u> , West Va. University Expt. Farm, P.O. Box 303, Kearneysville, West Virginia 25430. (304-876-6353)	(1)	USA
Bates, J. J., Biological Research Center, Imperial Chemicals Inc., P.O. Box 208, Goldsboro, North Carolina 27530. (919-736-3030)	(2)	USA

1/ Names underlined are contact persons for preparation of fire blight newsletter. Numbers in parentheses following addresses are local telephone numbers, and those in column at right indicate activity or interest in fire blight:

1. Actively engaged in fire blight research;
2. Indirectly interested in fire blight;
3. Interested in fire blight, but located in region where disease is not present;
4. Retired but still interested in fire blight activities.

Baumm, L. H., Institute fur Angewandte Botanik, Univ. of Hamburg, Marseillerstrasse 7, 2000 Hamburg 36, West Germany (040/41232359)	(1)	BRD
Baykal, N., Agric. Univ., Ziraat Fakultesi, Fitopatoloji Kursusu, Ankara, Turkey.	(3)	TUR
<u>Bazzi</u> , C., Laboratorio Fitobatteriologia, Instituto Patol. Vegetale, via Filippo Re 8, 40126 Bologna, Italy. (051-236175)	(3)	ITA
<u>Beer</u> , S. V., Department of Plant Pathology, Cornell University, Ithaca, New York 14853. (607-255-7870)	(1)	USA
Bell, R. L., U. S. Department of Agriculture, Appalachian Fruit Research Station, Rt. 2, Box 45, Kearneysville, West Virginia 25430. (304-725-3451, ext 53)	(1)	USA
Benjama, A., Station Regionale de Phytiatrie, Institut National de la Recherche Agronomique, B. P. S 40, Meknes, Morocco.	(3)	MOR
Bergna, D. A., Estacion Experimental Alto Valle, Casilla de Correo 52, 8332 General Roca, Rio Negro, Argentina. (0941-25017)	(3)	ARG
Berry, D. W., Jackson County Extension Office, 1301 Maple Grove Drive, Medford, Oregon 97501.	(2)	USA
Beutel, J. A., Department of Pomology, University of California, Davis, Calif. 95616. (916-752-0507)	(1)	USA
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<u>Austria</u>	*Keck, M. Vukovits, G.	
<u>Belgium</u>	Deckers, T. De Ley, J. Geenen, J. Laere, O. van Laroche, M. Luchene, K. van Maroquin, C.	*Porreye, W. Timmermans, Y. Vantomme, R. Veldeman, R. Vereecke, M. Vermaerke, D. Viseur, J.
<u>Brazil</u>	Bredemeier, D. Feliciano, A. J.	
<u>Canada</u>	AGR. CAN. LIBRARY Biggs, A. R. *Bonn, W. G. Cline, R. A. Coulombe, L. J. *Crowe, A. D. Davidson, J. G. N. *Evans, I. R. Gibbins, L. N. Howard, R. J. Hunter, C. L.	Kappel, F. Lane, D. Lethal, J. McPhee, R. Muir, J. Quamme, H. Rousselle, G. L. *Sholberg, P. *Stushnoff, C. Yorston, Y. M.
<u>China (P.R.)</u>	*Cao, R.	
<u>Cyprus</u>	*Dimova, M.	
<u>Czechoslovakia</u>	*Kudela, V. Paclt, J.	Vondracek, J.
<u>Denmark</u>	Anderson, H. Christensen, F. G. *Dinesen, G. Jorgensen, H. A.	Kristensen, H. R. Mosegaard, J. Simonsen, J.
<u>East Germany (DDR)</u>	*Kleinhempel, H. Muller, H. J.	Vogelsanger, D.
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<u>Yugoslavia</u>	Arsenijevic, M. Markovic, S.	Ristevski, B. *Stankovic, D.

UNITED STATES

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 Bushong, J. W.
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 *Steiner, P.
 *Sugar, D.
 Sutton, T. B.
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 *Thompson, J. M.
 *Thomson, S. V.
 Travis, J. A.
 Van Buskirk, P. D.
 *Wade, E. K.
 Way, R. D.
 Westwood, M. N.
 Wilcox, W. F.
 Willett, M.
 Wodzinski, R. S.
 *Yoder, K. S.
 Zehr, E. I.
 *Zoller, B. G.
 Zwet, T. van der

SUMMARYContact Persons for Fire Blight Newsletter

<u>United States</u>		<u>Other Countries</u>	
Arkansas	Slack, D.	Argentina	Meyer, F. C.
California	Zoller, B. G.	Australia	Cartwright, D. N.
Connecticut	Douglas, S. M.	Austria	Keck, M.
Georgia	Thompson, J. M.	Belgium	Porreye, W.
Illinois	Ries, S. M.	China (P.R.)	Cao, R.
Indiana	Janick, J.	Cyprus	Dimova, M.
Maryland	Steiner, P.	Czechoslovakia	Kudela, V.
Michigan	Jones, A. L.	Denmark	Dinesen, A.
Minnesota	Parker, D. W.	Egypt	Abo-El-Dahab, M.K.
Missouri	Goodman, R. N.	England	Garrett, C. M.E.
New Jersey	Preiser, F.	France	Paulin, J. P.
New York	Beer, S. V.	Germany (East)	Kleinhempel, H.
North Carolina	Ritchie, D. F.	Germany (West)	Zeller, W.
Ohio	Ellis, M. A.	Greece	Psallidas, P. G.
Oregon	Sugar, D.	Hungary	Simon, E.
Pennsylvania	Hickey, K. D.	Ireland	Walsh, P.
South Carolina	Miller, R. W.	Israel	Shabi, E.
Utah	Thomson, S. V.	Italy	Bazzi, C.
Virginia	Yoder, K. S.	Japan	Fujita, K.
Washington	Covey, R. P.	Mexico	Fucikovsky, L.
West Virginia	Barat, J. G.	Morocco	Chouibani, M.
Wisconsin	Wade, E. K.	Netherlands	van Vuurde, J. W. L.
<u>Canada</u>		New Zealand	Hale, C. N.
Alberta	Evans, I. R.	Norway	Sletten, H. J.
British Columbia	Sholberg, P.	Poland	Sobiczewski, P.
Nova Scotia	Crowe, A. D.	Portugal	Martins, J. M. S.
Ontario	Bonn, W. G.	Romania	Suta, V.
Saskatchewan	Stushnoff, C.	Russia	Voronkova, L.
		South Africa	Schwabe, W. F. S.
		Spain	Noval Alonso, C.
		Sweden	Graberg, M.
		Switzerland	Grimm, R.
		Yugoslavia	Stankovic, D.

SUMMARY

Country	Persons Interested in Fire Blight					Number of Contact Persons
	1	2	3	4	Total	
* USA - United States	35	48		5	88	22
* CND - Canada	5	16			21	5
* BRD - West Germany	9	14	2		25	1
* UK - England	12	2			14	1
* BLG - Belgium	11	3			14	1
* NL - Netherlands	5	5		2	12	1
* FR - France	4	3	1		8	1
* DK - Denmark	1	6			7	1
* DDR - East Germany		1	2		3	1
* NZ - New Zealand	1	1		1	3	1
* EGY - Egypt	2	1			3	1
* MEX - Mexico	1	2			3	1
* POL - Poland		1	1		2	1
* ISR - Israel	2				2	1
* CYP - Cyprus		1			1	1
ITA - Italy			9		9	1
SWT - Switzerland			7		7	1
SPN - Spain			6		6	1
GRC - Greece			4		4	1
HUN - Hungary			4		4	1
YUG - Yugoslavia			4		4	1
SA - South Africa			4		4	1
AUS - Australia			4		4	1
JAP - Japan			4		4	1
ARG - Argentina			3		3	1
CZE - Czechoslovakia			3		3	1
ROM - Romania			3		3	1
SWD - Sweden			2		2	1
NOR - Norway			2		2	1
POR - Portugal			2		2	1
MOR - Morocco			2		2	1
OST - Austria			2		2	1
IRL - Ireland			1		1	1
CHI - China			1		1	1
RUS - Russia			1		1	1
BRA - Brazil			2		2	
IND - India			2		2	
PHI - Philippines			1		1	
TUR - Turkey			1		1	
TOTAL	88	104	80	8	280	60

* Countries with fire blight.

* * * * *

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Fire Blight Mailing List Questionnaire

The list of names in this Newsletter is an annual attempt to establish a complete and updated mailing list of all persons interested in fire blight. Please make corrections and additions where necessary and send me any new names not listed. A new list will be prepared for the next newsletter.

My name, address and telephone are correct
(if not, show change below)

My interest in fire blight is correct
(if not, please indicate below)

My name should be dropped from this list

My/other name should be added to this list

* * * * *

CUT

NAME

* * * * *

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ADDRESS

ZIP

* * * * *

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TELEPHONE

* * * * *

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Interest in fire blight research:

1 2 3 4

* * * * *

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Interest in fire blight newsletter:

YES NO

* * * * *

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I will serve as contact person
for newsletter questionnaire:

YES NO

{ Please circle
one of each

* * * * *

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Please return to your contact person or directly to:

* * * * *

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T. van der Zwet
Appalachian Fruit Research Station
Route 2, Box 45
Kearneysville, West Virginia 25430

